SLO County and the LOWWP
TAC Report on Field Trip 9/3/08

The county invited the Technical Advisory Committee and public to join them on a field trip to two wastewater treatment sites: Scotts Valley near Santa Cruz and Discovery Bay near Stockton. John Waddell, Genaro Diaz, and Mark Hutchinson, employees of the county, led a group of 5 TAC members and 6 members of the public, and we were joined by Lou Carilla, consultant with Carollo Engineers. The following is a brief report of this field trip.

Scotts Valley Wastewater Reclamation Facility

One of the most important concerns facing Los Osos is the groundwater basin, its quality and recharge. If we can find ways to reuse treated effluent for non-potable purposes instead of over-pumping from the deep aquifer, we will take a significant step in mitigating sea water intrusion and ensuring the future of our drinking water. The purpose of visiting this particular facility was to learn about their effluent reuse and distribution systems. This wastewater plant is owned by the city, the sole water purveyor, and serves the current population of 11,600 people. It has an average flow of 850,000 gallons/ day, and has a capacity of 1.5 million gallons/ day, designed to meet the needs of 15,000 people at build-out. Scott Hamby, the plant manager and our guide, noted that, while the population of Scotts Valley has increased in the last 10 years, the total load has decreased 50,000 g/d between 1997 and 2007 thanks to rigorous water conservation efforts. The average user monthly sewer bill is $25.15.

The treatment plant site itself is a little more than 2 acres and is situated immediately adjacent to a dense residential area. The system produces very little oder and if there is a problem, prevailing winds take any odor away from the residential areas. The gravity collection system includes 40 miles of pipe and 7 pump stations.

Over the years the treatment plant has gone through several expansions and upgrades, including two major construction projects in 1985 and 1995-97, which cost the community approximately $7.5M. One of these projects was a flow-equalization basin, which allows them to maintain the flow in spite of daily and seasonal variations. Aeration tanks and clarifiers are used for secondary treatment. The sludge is processed with a belt filter press, and Sub-class B biosolids are hauled away. The effluent from the secondary clarifiers is currently split between disposal to an ocean outfall near Santa Cruz, and the portion that receives tertiary treatment which is recycled as grey water.

In 2001 the water purveyor (city) paid for the construction of a tertiary treatment system that would produce recycled water for unrestricted irrigation use. The tertiary treatment uses methanol to denitrify the effluent, resulting in approximately .8 to .9 mg/L of nitrogen. After disinfection with UV, the tertiary treated water meets State Title 22 standards for water reuse in California and is safe for all permitted uses. It is important to note that they installed the in-street pipes ("purple pipe") for distributing recycled water at the same time that other pipe was being installed in the roads, ***before*** the recycling system was built. Mr. Hamby emphasized that this recycling system would work well with either a gravity or STEP/ STEG collection system. He also noted that recycled water use continues to grow with time. The entire cost of the tertiary treatment plant and distribution system was $5.0M in 1998.

Scott Hamby, the plant manager, is proud of their record of no violations in over 8 years. The plant is run by 7 full-time employees, including the manager, chief operator, 4 employees (grade 1 or 2), and a lab analyst. They are an 8 hour/ day plant and handle all maintenance for both the collection system and the treatment plant.

Discovery Bay Greenhouse Sludge Drying Facility

There are many in our community that are concerned about the risk of increasing costs for dumping Sub-class B solids, as well as the cost and carbon footprint of trucks hauling solids out of town. The purpose of visiting Discovery Bay was to see the new hot composting process that produces Class A biosolids suitable for land applications. Discovery Bay has a population of over 13,000 people (5,800 units) and has an average flow of 1.6 to 1.9MGD. They have a capacity of 2.1 MGD to accommodate a build-out population of 6,600 units. The unusually high load per capita is due to very high inflow/infiltration (I/I) from old clay pipes in the older section of the community which were placed too close to the ground surface and, as a result, had been damaged. All new sections are laid with plastic pipe.

The CSD owns and operates the wastewater treatment plant. Three years ago their General Manager, Virgil Koehne, contracted with a U.S. division of a German engineering firm to construct this drying facility which consists of an outdoor shed with a belt press, two greenhouses, 205 feet x 41 feet each and a mechanized robot that turns the sludge during the drying process. The sludge from the waste water plant which is greater than 97% water is piped to the belt press which reduces the water content to approximately 86%. After the belt press

the sludge is transferred to the greenhouses, where a “mole,” a robotic vehicle, continuously stirs the sludge in a hot, enclosed environment (140-150 degrees). Fans are used to control inside temperatures by pushing heat down from the ceiling, as well as to exhaust the moisture laden air thus resulting in a very energy efficient operation. Depending upon weather conditions, the sludge turns to Class A biosolids with less then 5% moisture within four to six weeks. This process is linked to a weather station and is completed controlled by computers. The entire operation, including belt press building, was $2M. in 2005.

After two and a half years of careful testing at Berkeley and approval from their regional water board and the EPA, the biosolids have been deemed to be suitable to be used on landscaping and crops however the volume of remaining biosolids is extremely low. Mr. Koehne emphasized that this system has exceeded his expectations and he hopes to further improve the efficiency of the operation by adding cup-shaped windmills to supply renewable energy in the future.